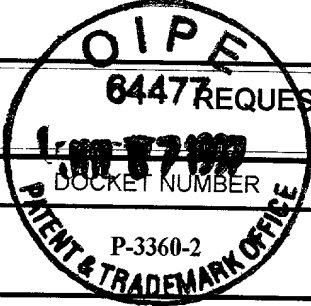


A/FWC



REQUEST FOR FILING A PATENT APPLICATION UNDER 37 CFR 1.62
(Small Entity)

DOCKET NUMBER P-3360-2	ANTICIPATED CLASSIFICATION OF THIS APPLICATION CLASS SUBCLASS		PRIOR APPLICATION EXAMINER C. Montgomery	ART UNIT 2201
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Address to:
Assistant Commissioner for Patents
Washington, D.C. 20231

This is a request for filing a ☒ continuation-in-part ☐ continuation ☐ divisional application under 37 CFR 1.62 of prior application Number 08/660,700, filed on 06/05/1996 entitled **GUIDED BULLET**

by the following named inventor(s):

Full Name of Sole or First Inventor Rolin F. Barrett, Jr.
Residence 4001 George V. Strong Wynd, Raleigh, North Carolina 27612
Citizenship USA
Post Office Address Same

☐ Additional inventors are being named on a separate sheet attached hereto.

The above identified prior application in which no payment of the issue fee, abandonment of, or termination of proceedings has occurred, is hereby expressly abandoned under 37 CFR 1.62(g) as of the filing date of this new application. Please use all the contents of the prior application file wrapper, including the drawing, as the basic papers for the new application. (No new specification is required.) (Note: 37 CFR 1.60 may be used for applications where the prior application is not to be abandoned.)

- 1. ☐ Enter the unentered amendment previously filed on _____ under 37 CFR 1.116 in the prior application.
- 2. ☒ A preliminary amendment is enclosed.

The filing fee is calculated on the basis of the claims existing in the prior application as amended at 1 and 2 above.

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	19	- 20 =	0	x \$11.00	\$0.00
Indep. Claims	2	- 3 =	0	x \$40.00	\$0.00
Multiple Dependent Claims (if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$385.00
TOTAL FILING FEE					\$385.00

EO 7 Sent to Group

REQUEST FOR FILING A PATENT APPLICATION UNDER 37 CFR 1.62

3. ☒ A verified statement to establish small entity status under 37 CFR 1.9 and 1.27
☐ is enclosed
☒ was filed in the prior application and such status is still proper and desired (37 CFR 1.28(a)).
4. ☐ The Commissioner is hereby authorized to charge fees under 37 CFR 1.16 and 1.17 which may be required, or credit any overpayment to Deposit Account No. _____ . (A duplicate copy of this form is enclosed)
5. ☒ A check in the amount of \$385.00 is enclosed
6. ☒ A new oath or declaration is compliance with 37 CFR 1.63 is included since this application is a continuation-in-part which discloses and claims additional matter.
7. ☐ Amend the specification by inserting before the first line the sentence:
This application is a ☒ continuation-in-part, ☐ continuation, ☐ division, of application number 08/660,700,
filed 06/05/1996, now abandoned.
8. ☐ Priority of foreign application number _____, filed on _____ in _____ Country
is claimed under 35 U.S.C. 119
9. ☐ The prior application is assigned of record to

10. ☒ The power of attorney in the prior application is to (name & address)

John G. Mills, Reg. No. 20,563

Clifford F. Rey, Reg. No. 37,920

11. ☐ Also enclosed:

Address all future correspondence to: (May only be completed by applicant, or attorney or agent of record)

John G. Mills

MILLS AND ASSOCIATES

P.O. BOX 587

Wake Forest, NC 27588

It is understood that secrecy under 35 U.S.C. 122 is hereby waived to the extent that if information or access is available to any one of the applications in the file wrapper of a 37 CFR 1.62 application, be it either this application or a prior application in the same file wrapper, the Patent and Trademark Office may provide similar information or access to all the other applications in the same file wrapper.

Dated:

6-27-97

Clifford F. Rey
Signature

Clifford F. Rey
Typed or printed name

- ☐ Inventor(s)
☐ Assignee of complete interest
☒ Attorney or agent of record
☐ Filed under 37 C.F.R. 1.34(a)

cc:

--Fig. 11A is a partial longitudinal section view of the guided bullet showing a deployable flap in the absence of a control voltage being applied thereto;

Fig. 11B is a partial longitudinal section view of the deployable flap of Fig. 11A shown with a control voltage being applied thereto;

Fig. 12 is a side elevational view of an alternative embodiment of the guided bullet of the present invention;

Fig. 13 is a cross sectional view of the forward sealing/alignment ring of the alternative embodiment of the guided bullet depicted in Fig. 12; and

Fig. 14 is a cross sectional view of the aft alignment ring of the alternative embodiment of the guided bullet depicted in Fig. 12--.

On page 10, line 23, after "target.", insert --Tail fin stabilization will be required to impart directional stability to the guided bullet 10 in virtually all distance ranges to prevent tumbling of the projectile once it is subjected to a corrective moment from the steering control surfaces.

When utilized for stabilization, a plurality of fixed fins 38 are equally spaced circumferentially around the rearward end of the bullet body 11 as shown in Fig. 12. In the embodiment shown four identical fins 38 are incorporated to form a tetragonal arrangement.--

On page 11, line 5, after "11" insert --as more clearly shown in Fig. 11A.--

On page 11, line 10 after "art." insert --As can be seen in Figs. 11A and 11B, each of the flaps 30 are manufactured in a layered configuration including an inner layer 30a comprising piezoelectric material permanently bonded to the underside of an outer layer 30b of a synthetic material such as KEVLAR or other suitable material capable of withstanding bore firing pressures and temperatures.

As shown in Fig. 11A, flap 30 is configured to closely conform to and to be disposed within a recessed area as at 32 formed in the outer surface 11a of the guided bullet body 11.

In the presence of an applied controlled voltage provided by an onboard power source, the piezoelectric layer 30a is extended in length along its longitudinal axis causing the outer layer 30b of KEVLAR to bend outwardly beyond the outer surface 11a of the bullet body 11 as shown in Fig. 11B.--

On page 12, line 8 after "battery." insert --Control voltages are applied to the piezoelectric flaps from the battery 35 through the integrated functions of logic circuit 28. The battery 35, flaps 30 and logic circuit 28 are electrically connected by conductors such as wires (not shown) sheathed in an insulating coating and embedded in plurality of channels 36 formed in the body 11 of the guided bullet.

The channels 36 are formed in the bullet body 11 by drilling, milling, or other known machine tool processes.

The insulated conductors are rigidly secured within channels 36 by epoxy or other suitable adhesive means to withstand bore firing pressures.

In an alternative embodiment the electrical conductors are comprised of an electroconductive paint mixed with an epoxy compound which fills channels 36 to electrically interconnect the components of the guidance system.

Since such electroconductors are well known to those skilled in the art, further detailed discussion of the same is not deemed necessary.

Turning now to Fig. 12, there is shown therein an alternative embodiment of the guided bullet of the present invention indicated generally at 10'. In this embodiment a plurality of deployable flaps 30' are

symmetrically disposed about the forward end 11b of the projectile to translate the guided bullet 10' toward the optimum trajectory in substantially the same manner as described hereinabove.

In this embodiment the deployable flaps 30' are constructed of the same piezoelectric materials and the control voltages are applied thereto in essentially the same manner as previously described herein.

Although the aerodynamic effects of the forward mounted steering flaps 30' on the in-flight projectile and the correctional momentum imparted to the in-flight bullet may vary considerably from the rearward flaps 30 such variable parameters are considered to be within the scope of the present invention.

A significant difference in the embodiment shown in Fig. 12 is the inclusion of a plurality of laser sensor patches, which are equally spaced circumferentially about the forward end of the bullet 10'. The sensor patches 25 are comprised of a fiber optic material which optically connects the laser sensors 22 that are disposed internally of the bullet body 11'.

In this arrangement a plurality of laser sensors 22 may be disposed in axial alignment along the longitudinal centerline of the projectile such that only their respective sensor patches 25 extend to the external surface of the bullet body 11 thereby permitting a reduction in outside diameter and caliber of the guided bullet 10'.

Still referring to Fig. 12 the guided bullet 10' is provided with a forward sealing/alignment ring 39 and a rearward alignment ring 40 which are disposed circumferentially around the body 11 of the projectile.

In the preferred embodiment both the forward sealing/alignment ring 39 and the rearward alignment ring 40 are circular in configuration as more clearly shown in Figs. 13 and 14 respectively.

In the preferred embodiment both rings 39 and 40 are fabricated from a soft metal or plastic material and function to align the guided bullet 10' in the bore of the firing rifle and to protect surfaces of the guided bullet body 11 and the bore of the weapon (not shown) from friction and damage during firing. In addition, the forward ring 39 functions to reduce leakage of combustion gases during firing while the rearward ring 40 includes a plurality of symmetrically spaced undercut areas 40a which permit the flow of combustion gases past the rearward ring 40 during firing.

In this alternative embodiment directional stability is provided by a plurality of fixed tail fins 38 which are equally spaced circumferentially around the rearward end of the bullet body 11.--

On page 13, line 20, after ")))" insert --Cd--.

On page 13, line 21, after "bullet" insert --Cd = coefficient of drag--.

On page 12, line 15, change "forward end 11b" to --body 11--.

On page 12, lines 15 and 16, delete "The rearward section 11c...deployable flaps 30.--

IN THE DRAWINGS

Please add new drawing figures 11A, 11B, 12, 13, and 14.

IN THE CLAIMS

Please amend the Claims as follows:

1. (Amended) A bullet guidance system for guiding an in-flight bullet along an optimum trajectory along which said bullet would impact a laser-identified target, said system comprising:

laser beam detecting means contained within said bullet and being capable of receiving laser beam energy reflected from said target and converting said energy to electrical impulses;

logic circuit means contained within said bullet having means therein responsive to receipt of said impulses for determining the deviation of said bullet from said optimum trajectory and for generating corrective signals in response to said impulses;

steering control means having means therein responsive to said corrective signals in the manner to actuate said steering control means so as to deflect air flow about said bullet [thereby translating the same to said optimum trajectory] , said control means including at least one deployable flap means being outwardly extensible from said bullet to deflect air flow about said bullet to impart a correctional momentum to translate said bullet to said optimum trajectory; and

power supply means contained within said bullet being interconnectable to said logic circuit and said steering control means to provide sufficient electrical power to produce the functions required by said system.

In Claim 4, line 2, delete "said" (first occurrence).

In Claim 7, line 1, change "6" to --1--.

In Claim 10, line 3, delete "conventional".

In Claim 11, line 2, delete "conventional".

In Claim 19, line 2, delete "conventional".

Cancel Claim 6.

REMARKS

In order to expedite prosecution of the present Application, this Preliminary Amendment is filed in accordance with 37 C.F.R. 1.62 in the present Continuation In Part application.

Specification Objections

The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide a written description of the invention which would have enabled one of ordinary skill in the art to make and use the invention. The appropriate paragraphs of the Office Action setting forth the basis for these objections is as follows:

It is not clear from the specification how the described projectile is guided to the target without stabilization means: in the absence of both spin and fin stabilization, it would appear that the projectile would tumble after a short flight distance. Further, tumbling would appear to be inevitable once the projectile is subjected to a corrective movement from the flap mechanisms.

The configuration of the piezoelectric spoiler flaps is also not adequately disclosed. Although the specification states that the piezoelectric materials used are well known (page 11), examiner does not believe that spoilers of this scale and operative in this environment are well-known. The placement of the piezoelectric elements at the base of the projectile where they are subjected to bore firing pressures in a particularly harsh environment.

In lines 16-17 of page 12, it is stated that the rearward section of the projectile is made from piezoelectric materials. However, this description does not adequately describe the

extent to which the rearward section comprises said materials. It is not clear if only the spoiler flaps are piezoelectric materials. However, this description does not adequately describe the extent to which the rearward section comprises said materials. It is not clear if only the spoiler flaps are piezoelectric, or if the entire rearward section is of piezoelectric material. Further, it is not clear from the drawings how the control voltages are applied to the flaps.

Accordingly, Applicant has amended the Specification and the Drawings to provide a more clear and concise description of the invention which would enable one of ordinary skill in the art to make and use the invention in compliance with 35 U.S.C. 112, first paragraph.

Further, Applicant has provided additional disclosure and drawing views to an alternative embodiment of the present invention.

Claim Rejections - 35 USC § 112

Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph. The appropriate paragraph of the Office Action setting forth the basis for this rejection is as follows:

Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is not clear from the specification how a small-caliber projectile could be guided to target without stabilization. Also, the steering control means, including the makeup of the rear portion of the projectile, are not sufficiently disclosed to enable a skilled artisan to make the invention.

Accordingly, Applicant has amended the Specification as set forth hereinabove to provide a clear and concise description of the invention to enable a skilled artisan to make the invention. Thus, it is respectfully

requested that the rejection of Applicant's Claims 1-19 under 35 U.S.C. 112, first paragraph be withdrawn.

Further, Applicant's Claims 4, 5, 10, 11, 12, and 19 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The appropriate paragraph of the Office Action setting forth the basis for these rejections is as follows:

In line 2 of Claim 4, "said amplification means" has no antecedent basis.

In Claims 10-11 and 19, the word "conventional" is indefinite in describing the form of the powder charge and rifle.

Accordingly, Applicant has amended Claims 4, 5, 10-12, and 19 to delete the indefinite language so kindly pointed out by the Examiner.

Claim Rejections - 35 U.S.C. § 103

Claims 1-4, 8, 13-17, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lawhorn et al. in view of Albrektsson et al. The appropriate paragraphs of the Office Action setting forth the basis for these objections is as follows:

In figure 2, Lawhorn discloses a bullet guidance system comprising:

logic circuit means 162;

piezoelectric steering control means 102 (see column 2, lines 64-66);

miniature power supply means 160; and

a conventional powder charge (see column 2, lines 10-13).

However, Lawhorn discloses a beam-rider guidance system, rather than a forward-looking semi-active scheme.

Albrektsson teaches that a gun-launched projectile may be guided by a forward-looking semi-active scheme. Albrektsson uses three spaced detectors to collect reflected laser energy (column 5, lines 49+), where the received energy is amplified and used to control the path of the projectile. In light of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to utilize a semi-active guidance system in the projectile of Lawhorn, as this system requires no spatial encoding of the guide beam laser.

As to Claim 3, the inclusion of amplification circuitry in microchip is well known, and not deemed a patentable distinction.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawhorn in view of Albrektsson, as applied to Claims 1-4, 8, 13-17, and 19 above, and further in view of Schneider. The appropriate paragraphs of the Office Action setting forth the basis for this rejection are as follows:

When combined with Albrektsson, Lawhorn discloses the invention substantially as claimed. However, Lawhorn does not disclose the manner in which his control circuitry is mounted within the projectile.

In figure 3, Schneider shows that circuit cards 120 may be mounted on a transverse bulkhead (plate) 118. This configuration allows the cards to cool during operation. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to mount the control circuitry of Lawhorn in a similar manner. While the circuit

boards of Schneider are mounted aft of the bulkhead, this distinction with the requirement of Claim 5 is not deemed a patentable one. the reversal of the location is considered a design choice dictated by the required location of the circuitry in a particular projectile, and therefore obvious to the skilled artisan.

Claim 6 and 7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lawhorn in view of Albrektsson as applied to Claims 1-4, 8, 13-17, and 19 above, and further in view of Maudal et al. The appropriate paragraphs of the Office Action setting forth the basis for these rejections are as follows:

When combined with Albrektsson, Lawhorn discloses the invention substantially as claimed. However, Lawhorn shows directed fluid flow control means, rather than piezoelectrically actuated flaps.

Maudal et al. teach that a projectile may be guided by deformable flaps 62 which are actuated by a hydraulic cylinder 64. In light of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to utilize deployable flaps to steer the projectile formed by the combination of Lawhorn and Albrektsson. These flaps are preferable to the diverted flow system of Lawhorn, because of the relative simplicity of the flap/actuator arrangement. While the Maudal et al. actuators are hydraulic, piezoelectric actuators of this type are well known in the guided projectile art, as shown by the piezoelectric valve actuators of Lawhorn 9column 2, lines 64+).

Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Lawhorn in view of Albrektsson, as applied to Claims 1-4, 8, 13-17 and 19 above, and further in view of Tura et al. The appropriate paragraphs of the Office Action setting forth the basis for this rejection is as follows:

When combined with Albrektsson, Lawhorn discloses the invention substantially as claimed. However, Lawhorn does not disclose a lithium-polymer battery.

Tura et al. teach that their lithium-polymer cells are thin, have high storage capacity, and have a long shelf life (column 1, lines 63+). In light of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to replace the thermal cell of Lawhorn with a lithium-polymer cell, to achieve the advantages cited by Tura et al.

OBVIOUSNESS STANDARD

The Patent Office is respectfully reminded that it has the burden under § 103 to establish a prima facie case of obviousness. This burden can only be satisfied by showing some objective teaching in the prior art or evidence that knowledge available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. In re David H. Fine, Appeal No. 87-1319, page 6 (decided January 26, 1988, Fed. Cir.) (citing In re Piasecki, 745 F2d 1468, 1471-72, 223 USPQ 785, 787 (Fed. Cir. 1984)).

The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this invention should be carried out and would have a reasonable likelihood of success viewed in light of the prior art. In re Dow Chemical Co., Appeal No. 87-1406, page 7 (decided January 25, 1988 Fed. Cir.) (citing Burlington Industries v. Quigg, 822 F2d 1581, 1583, 3 USPQ 2d 1436, 1438 Fed. Cir. 1987)).

It is respectfully submitted that the Examiner has not made a proper prima facie showing of obviousness in this case for the following reasons:

Summary of References

With regard to the rejection of Claims 1-4, 8, 13-17, and 19 over Lawhorn et al. in view of Albrektsson et al., Lawhorn discloses a guided projectile which employs dual guidance or exhaust nozzles **which alternately expel air in opposite directions to provide lateral positional corrections along the projectile trajectory.** The air mass used to control the projectile is ingested through an annular forward facing inlet and is expelled in a controlled manner through the opposing exhaust nozzles at a frequency which corresponds to the projectile spin rate. A fluidic switching concept is employed to enhance internal air flow to the desired nozzle by opening and closing small orifices located forward of the exhaust nozzles. (See Lawhorn column 5, lines 41-51).

In one embodiment of the Lawhorn invention, airflow through the switching orifices is regulated by piezoceramic valves which respond to signals received from an external guidance system such as a beam rider optical system controlled by a tracking aircraft. (Lawhorn column 2, lines 64-68).

It is significant that the Lawhorn patent does not disclose piezoelectric steering control means **including a deployable flap or air foil which is outwardly extensible from the projectile to correct the trajectory in flight as claimed in the present invention.**

The Albrektsson reference discloses a device for correcting a rotating projectile, for instance an anti-tank projectile, fired from a gun barrel, in the terminal phase of its ballistic trajectory, with the aid of a laser beam transmitted from a laser transmitter and directed towards the target. The projectile is provided with an array of forward-facing laser detectors which upon receipt from the target of an echo signal, transmit a correctional impulse

to an onboard motor for correcting the trajectory of the projectile. (Albrektsson column 1, lines 4-13).

PRIOR ART TEACHES AWAY FROM APPLICANT'S INVENTION

The Supreme Court held in U.S. v. Adams, 383 U.S. 39, 148 U.S.P.Q. 479 (1966), that one important indicium of non obviousness is "teaching away" from the claimed invention of the prior art whereby experts in the art at or after the time of the invention was made.

The Federal Circuit has consistently held that the prior art's teaching away prevents a purported § 103 rejection from rising to the dignity of prima facie obviousness.

In short, teaching away is the antithesis of the prior art's suggesting the person of ordinary skill will go in the claimed direction. Essentially, teaching away from the art is a per se demonstration of lack of prima facie obviousness. In re Dow Chemical Company 837 F.2d 469, 5 U.S.P.Q. 2d 1529 (Fed. Cir. 1988); In re Fine, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988).

It is significant that the Lawhorn reference "teaches away" from the claimed invention. With reference to the Lawhorn specification, the guided projectile system is based on the use of **free-stream ram air for maneuvering**. The guided projectile in Lawhorn employs dual exhaust nozzles which alternately expel air in opposite directions to provide lateral position correction along the projectile trajectory.

In marked contrast the present invention utilizes piezoelectrically controlled flaps 30 which are **outwardly extensible into the air stream** for guiding the in-flight bullet along an optimum trajectory.

In Lawhorn the guided projectile is **spin stabilized**, having a plurality of fixed fins 42 equally spaced circumferentially around cartridge 24.

In marked contrast, the preferred embodiment of the present invention is fired from a smooth bored gun barrel and **is not imparted with rotational spin** eliminating the requirement for spin stabilization.

Thus, it is respectfully submitted that the inventive concept in Lawhorn is a significantly different approach and constitutes "teaching away" from the present invention, which is a per se demonstration of lack of prima facie obviousness.

APPLICANT'S INVENTION SOLVES A DIFFERENT PROBLEM THAN THE CITED REFERENCE

The determination of whether a novel structure is or is not obvious requires cognizance of the properties of that structure and the problem which it solves viewed in light of the teachings of the prior art. In re Rinehart, 531 F.2d 1048, 1054, 189 U.S.P.Q. 143, 149 (CCPA 1976).

Thus, the question is whether what the inventor did would have been obvious to one of ordinary skill in the art attempting to solve the problem on which the inventor was working. In re Rinehart, 531 F.2d 1054, 189 U.S.P.Q. at 149.

The problem upon which Applicant is working is steering an in-flight bullet along an optimum trajectory to impact a laser-identified target **by deploying an extensible air foil into the surrounding air stream** to impart a correctional momentum to the in-flight bullet.

The present invention solves this problem by providing at least one piezoelectrically controlled flap capable of expansion and contraction when subjected to an electrical current from an on-board power source.

It is respectfully submitted that the Lawhorn reference is directed toward an entirely different problem and functions in an entirely different manner than the Applicant's invention as described hereinabove. The Lawhorn device is based on the use of **free-stream ram air which is directed through a forward opening inlet** and flows through dual exhaust nozzles which alternately expel air in the opposite direction to provide lateral position correction along the projectile trajectory.

The problem solved by the invention is always relevant. The entirety of the claimed invention, including the combination viewed as a whole, the elements thereof, and the properties and purpose of the invention must be considered. In re Wright, Appeal No. 87-1464, 6 U.S.P.Q. 2d 1958, 1962 (Fed. Cir. 19988).

Thus, it is respectfully submitted that a determination of obviousness under 35 U.S.C. 103 requires consideration not only of an invention's structure but its properties and the problem solved. Since the primary reference to Lawhorn does not show or suggest properties and results of Applicant's claimed invention or suggest a solution to the problem of guiding an in-flight bullet along an optimum trajectory by deploying an air foil into the surrounding air stream, it is respectfully submitted that the Lawhorn reference may not properly serve as the basis for an obviousness rejection under 35 U.S.C. 103.

REFERENCE IS NOT PROPERLY MODIFIED

IF ITS INTENDED FUNCTION IS DESTROYED

A § 103 rejection based upon a modification of a reference that destroys the intent, purpose or function of the invention disclosed in the reference, is not proper and the prima facie case of obviousness cannot be properly made. In short, there would be no technological motivation for

engaging in the modification or change. To the contrary, it would be a disincentive. In re Gordon, 733F.2d 900, 21 U.S.P.Q. 1125 (Fed. Cir. 1984).

Thus, it is significant that if the Lawhorn reference were to be modified as taught by Albrektsson to meet the claims of the present invention, its intended function would be destroyed.

More particularly, Lawhorn discloses a beam-rider guidance system controlled by tracking aircraft. The Lawhorn guidance system utilizes a **rearwardly facing**, electro-optical detector 164 having an optical lens 166 which is mounted at the aft end of a boattail assembly 24. (Lawhorn, column 4, lines 14-19).

The modification of the Lawhorn guidance system to include the **forward-looking** semi-active scheme disclosed in Albrektsson, which requires detection of a laser beam reflected from the target, destroys the intended function of the Lawhorn device, which responds to signals received from an external beam rider guidance system.

Further, in Lawhorn the flow control mechanism 70 communicates air flow from a forward opening inlet 36 through exhaust nozzles 74 and 76 to provide lateral positional corrections along the projectile trajectory. The modification of Lawhorn to include the forward-looking laser detectors as shown in Figs. 6 and 7 of Albrektsson physically interferes with the flow of air into the forward inlet 36 and the expulsion thereof through the dual exhaust nozzles thereby destroying the intended function of the Lawhorn system.

For all of the reasons given above, Applicant respectfully submits that the claimed distinctions are of patentable merit under 35 U.S.C. § 103 for want of a proper showing of prima facie obviousness.

Accordingly, Applicant respectfully submits that the Application is now full condition for allowance. Reconsideration and withdrawal of the rejections is requested.

Should the Examiner feel that it would expedite prosecution to discuss the Application with Counsel, please give me a call.

Respectfully submitted,

Clifford F. Rey

Clifford F. Rey
Patent Attorney
Registration No. 37,920
(919)554-4200

CERTIFICATE OF MAILING

I hereby certify that this document is being deposited in the United States Postal Service as First Class Mail, postage prepaid in an envelope addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231

Clifford F. Rey
Date 7-3-97

3360-2.rsp

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS UNDER 37 CFR 1.9(f) AND 1.27 (b)) - INDEPENDENT INVENTOR

Docket No.
P-3360-2

Serial No.

08/660 300

Filing Date

06/05/1996

Patent No.

Issue Date

Applicant/ **Rolin F. Barrett, Jr.**
 Patentee:

Invention: **GUIDED BULLET**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled above and described in:

- ☐ the specification to be filed herewith.
☒ the application identified above.
☐ the patent identified above.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern or organization exists.
☐ Each such person, concern or organization is listed below.

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27)

FULL NAME

ADDRESS

☐

Individual

☐

Small Business Concern

☐

Nonprofit Organization

FULL NAME

ADDRESS

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Individual

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Small Business Concern

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Nonprofit Organization

FULL NAME

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Small Business Concern

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Nonprofit Organization

FULL NAME

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Individual

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Small Business Concern

☐

Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF INVENTOR Rolin F. Barrett, Jr.SIGNATURE OF INVENTOR Rol F. Barrett, Jr.DATE: 6-27-97

NAME OF INVENTOR _____

SIGNATURE OF INVENTOR _____

DATE: _____

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SIGNATURE OF INVENTOR _____

DATE: _____



**PETITION, DECLARATION AND POWER OF ATTORNEY
FOR CONTINUATION-IN-PART APPLICATION**

I, Rolin F. Barrett, Jr., declare that I am a citizen of the United States of America, whose Post Office and residence address is 4001 George V. Strong Wynd, Raleigh, North Carolina 27612; that I have read and understand the foregoing specification and claim and I verily believe that I am the original, first and sole inventor of the design for a GUIDED BULLET described and claimed therein; that this application is a continuation-in-part of Application Serial Number 08/660,700 filed June 5, 1996; that as to the subject matter of this Application which is common to said Application Serial Number 08/660,700. I do not know and do not believe that this invention was ever known or used before my invention thereof, or patented or described in any printed publication in any country before my Invention thereof, or more than one year prior to this application, or in public use or on sale in the United States more than one year prior to this application; that this invention has not been patented or made subject to an Inventor's Certificate issued before the date of this application in any country foreign to the United States on an application filed by me or my legal representatives or assigns more than twelve months before the filing of this application; that as to the subject matter of the aforesaid United States Patent Application Serial Number 08/660,700, filed June 5, 1996, which is not common to said Application Serial Number 08/660,700, I do not know and do not believe that this invention was ever known or used before my invention thereof, or patented or described in any printed publication in any country before my Invention thereof, or more than one year prior to this application, or in public use or on sale in the United States more than one year prior to this application; that this invention has not been patented or made subject to an Inventor's Certificate issued before the date of this application in any country foreign to the United States on an application filed by me or my legal representatives or assigns more than twelve months before the filing of this application.

464040-214000

I acknowledge my duty to disclose and file in this application information of which I am aware which is material to the examination of this application; in accordance with 37 CFR 1.56(a) and that no application for patent or Inventor's Certificate on this invention has been filed by me or my representatives or assigns in any country foreign to the United States.

I declare further that I am an independent inventor and have (1) not assigned, granted, conveyed or licensed this invention, and (2) am under no obligation under contract or law to assign, grant, convey or license any rights in this invention to any person who could not likewise be classified as an independent inventor under 37 CFR 1.9(c) if that person had made this invention, or to any concern which would not qualify as a small business concern or a non-profit organization under 37 CFR 1.9(d) or a non-profit organization under 37 CFR 1.9(e).

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

The undersigned Petitioner declares additionally that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful, false statements may jeopardize the validity of the application or any patent issuing thereon.

And I hereby appoint John G. Mills of John G. Mills and Associates, whose office is located at 853 Wake Forest Business Park, P. O. Box 587, Wake Forest, North Carolina 27588-0587, Registration Number 20,563, my attorney to prosecute this application and to transact all business in the Patent Office connected therewith.

Wherefore, I pray that Letters Patent be granted to me for the invention or discovery described and claimed in said specification and claims and I verily subscribe my name to the said specification and claims, declaration, power of attorney and this petition.

Rol F. Barrett, Jr.

Rolin F. Barrett, Jr.

Date. 6-27-97

44040-5218880

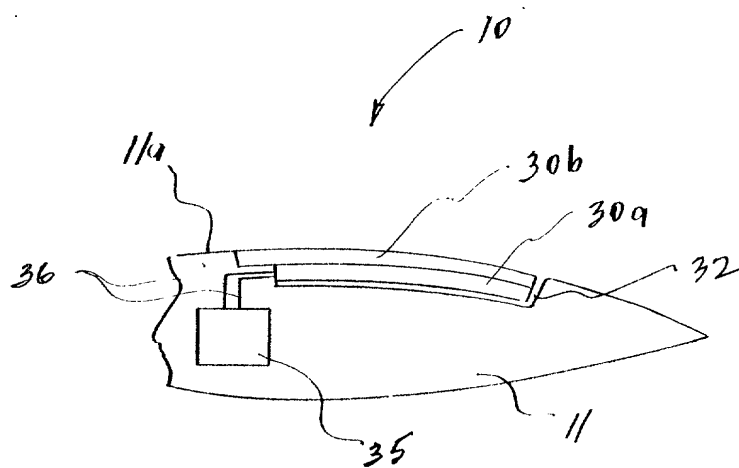


FIG. 11A

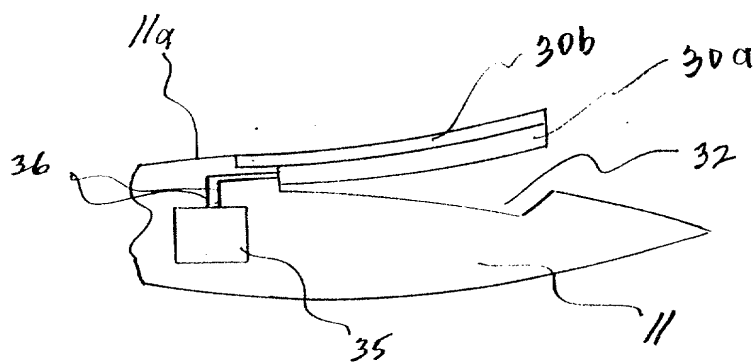


FIG. 11B

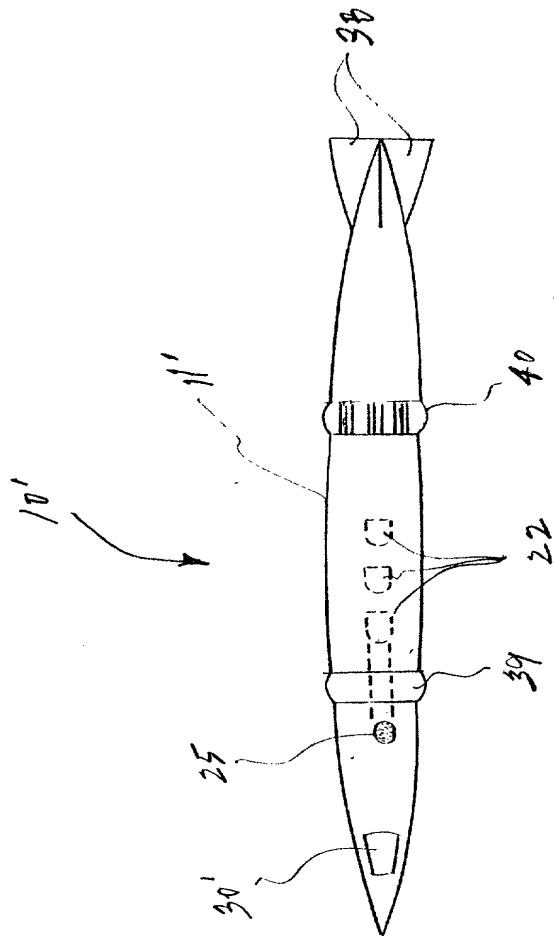


FIG. 12

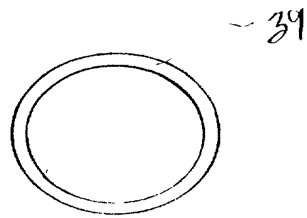


FIG. 13

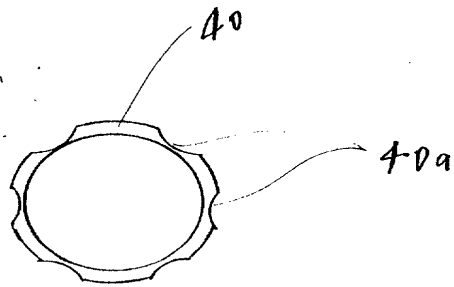


FIG. 14